

Mathematics K-10

Continuum of Key Ideas

NUMBER AND ALGEBRA	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5.1	STAGE 5.2	STAGE 5.3
WHOLE NUMBERS	<ul style="list-style-type: none">Count forwards to 30 from a given numberCount backwards from a given number in the range 0 to 20Compare, order, read and represent numbers to at least 20Read and use the ordinal names to at least 'tenth'Sublisse small collections of objectsUse the term 'is the same as' to express equality of groupsUse the language of money	<p>PART 1</p> <ul style="list-style-type: none">Count forwards and backwards by ones from a two-digit numberPartition two-digit numbers using place valueRead, write and order two-digit numbersRead and use ordinal names to at least 'thirty-first'Recognise, describe and order Australian coins according to their value <p>PART 2</p> <ul style="list-style-type: none">Count forwards and backwards by twos, threes, fives and tens from any starting pointPartition numbers of up to three digits using place valueRead, write and order three-digit numbersRecognise, count and order Australian coins and notes according to their value	<p>PART 1</p> <ul style="list-style-type: none">Count forwards and backwards by tens and hundreds from any starting pointState the place value of digits in numbers of up to four digitsRead, write and order numbers of up to four digits <p>PART 2</p> <ul style="list-style-type: none">State the place value of digits in numbers of up to five digitsRead, write and order numbers of up to five digitsRecord numbers of up to five digits using expanded notation	<p>PART 1</p> <ul style="list-style-type: none">Read, write and order numbers of any sizeState the place value of digits in numbers of any sizeRecord numbers of any size using expanded notationDetermine factors and multiples of whole numbers <p>PART 2</p> <ul style="list-style-type: none">Recognise the location of negative numbers in relation to zero on a number lineIdentify and describe prime and composite numbersModel and describe square and triangular numbers				
ADDITION AND SUBTRACTION	<ul style="list-style-type: none">Combine two or more groups of objects to model additionTake part of a group away to model subtractionCompare two groups to determine 'how many more'Record addition and subtraction informally	<p>PART 1</p> <ul style="list-style-type: none">Model addition and subtraction using concrete materialsRecognise and recall combinations of numbers that add to numbers up to 20Model and apply the commutative property for additionRecord number sentences using drawings, words, numerals and the symbols +, – and =Use and record a range of mental strategies for addition and subtraction of one- and two-digit numbersUse the equals sign to record equivalent number sentences <p>PART 2</p> <ul style="list-style-type: none">Make connections between addition and subtractionUse and record a range of mental strategies for addition and subtraction of two-digit numbersSolve word problems involving addition and subtraction	<p>PART 1</p> <ul style="list-style-type: none">Model and apply the associative property for additionUse and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbersPerform calculations with money, including calculating equivalent amounts using different denominationsUse the equals sign to record equivalent number sentences <p>PART 2</p> <ul style="list-style-type: none">Use the inverse operation to check addition and subtraction calculationsUse and record a range of mental strategies for addition and subtraction of two-, three-, four- and five-digit numbersUse the formal written algorithm for addition and subtractionSolve word problems, including those involving money	<p>PART 1</p> <ul style="list-style-type: none">Select and apply efficient mental, written and calculator strategies for addition and subtraction of numbers of any sizeUse estimation to check answers to calculationsSolve word problems and record the strategy used, including problems involving money <p>PART 2</p> <ul style="list-style-type: none">Select and apply efficient mental, written and calculator strategies to solve word problems and record the strategy used	<p>COMPUTATION WITH INTEGERS</p> <ul style="list-style-type: none">Apply associative, commutative and distributive laws to aid mental computationApply the four operations with integersApply the order of operations			
MULTIPLICATION AND DIVISION	<ul style="list-style-type: none">Investigate and model equal groupsRecord grouping and sharing using informal methods	<p>PART 1</p> <ul style="list-style-type: none">Rhythmic and skip count by twos, fives and tens from zeroModel and use equal 'groups of' objects as a strategy for multiplicationModel division by sharing a collection equally into a given number of groups to determine the number in each groupModel division by sharing a collection equally into groups of a given size to determine the number of groups <p>PART 2</p> <ul style="list-style-type: none">Model and use repeated addition as a strategy for multiplicationModel and use arrays described in terms of 'rows' and 'columns' as a strategy for multiplicationModel and use groups, arrays and repeated subtraction as strategies for divisionRecord using drawings, words and numerals	<p>PART 1</p> <ul style="list-style-type: none">Recall multiplication facts for twos, threes, fives and tensRecognise and use the symbols × and ÷Link multiplication and division using arraysModel and apply to commutative property for multiplicationUse mental strategies to multiply one-digit numbers by multiples of 10Use and record a range of mental strategies for multiplication of two single-digit numbers <p>PART 2</p> <ul style="list-style-type: none">Recall and use multiplication facts up to 10 × 10 with automaticityRelate multiplication facts to their inverse division factsDetermine multiples and factors of whole numbersUse the equals sign to record equivalent number relationships involving multiplicationUse and record a range of mental and informal written strategies for multiplication and division of two-digit numbers by a one digit operatorUse mental strategies and informal recording methods for division with remainders	<p>PART 1</p> <ul style="list-style-type: none">Use and record a range of mental and written strategies to multiply by one- and two-digit operatorsUse the formal algorithm for multiplication by one- and two-digit operatorsUse and record a range of mental and written strategies to divide numbers with three or more digits by a one-digit operator, including problems that result in a remainderSolve word problems and record the strategy usedInterpret remainders in division problemsUse estimation to check answers to calculations <p>PART 2</p> <ul style="list-style-type: none">Select and apply efficient mental, written and calculator strategies to solve word problems and record the strategy usedRecognise and use grouping symbolsApply the order of operations in calculations	<p>INDICES</p> <ul style="list-style-type: none">Use index notation for positive integral indicesExpress a whole number as a product of its prime factorsApply the order of operations to evaluate numerical expressions involving indicesDetermine and apply tests of divisibilityFind square roots and cube rootsDetermine and apply the index laws for numerical expressions with positive-integer indicesDetermine and apply the meaning of the zero index	<p>INDICES</p> <ul style="list-style-type: none">Apply the index laws to simplify algebraic expressions with positive-integer indices and the zero indexDefine and use negative-integer indices to evaluate numerical expressions	<p>INDICES</p> <ul style="list-style-type: none">Convert algebraic expressions with negative indices to expressions with positive indices and vice versaSimplify algebraic expressions involving positive, negative and zero indices	<p>SURDS AND INDICES</p> <ul style="list-style-type: none">Define the system of real numbers and distinguish between rational and irrational numbersPerform operations with surdsConvert between surd and index form and vice versa
FRACTIONS AND DECIMALS	<ul style="list-style-type: none">Establish the concept of one-halfRecord halves of objects using drawings	<p>PART 1</p> <ul style="list-style-type: none">Recognise, describe and represent one-half as one of two equal parts of whole objects, shapes and collectionsUse fraction notation $\frac{1}{2}$ <p>PART 2</p> <ul style="list-style-type: none">Recognise, describe and represent halves, quarters and eighths of whole objects, shapes and collectionsUse fraction notation $\frac{1}{4}$ and $\frac{1}{8}$	<p>PART 1</p> <ul style="list-style-type: none">Model and represent fractions with denominators 2, 3, 4, 5 and 8Count by halves, quarters and thirds, including with mixed numeralsRepresent fractions on number lines, including number lines that extend beyond 1 <p>PART 2</p> <ul style="list-style-type: none">Model and find equivalence between fractions with denominators 2, 4 and 8, 3 and 6, and 5, 10 and 100Apply the place value system to represent tenths and hundredths as decimalsMake connections between fraction and decimal notationModel, compare and represent decimals with one and two decimal placesRepresent decimals on number lines	<p>PART 1</p> <ul style="list-style-type: none">Compare and order unit fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100Express mixed numerals as improper fractions and vice versaModel and represent strategies to add and subtract fractions with the same denominatorApply the place value system to represent thousands as decimalsCompare, order and represent decimals with up to three decimal places <p>PART 2</p> <ul style="list-style-type: none">Represent, compare and order fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100Determine, generate and record equivalent fractionsWrite fractions in their 'simplest form'Add and subtract fractions, including mixed numerals, with the same or related denominatorsMultiply fractions by whole numbersFind a simple fraction of a quantityUse mental, written and calculator strategies to add and subtract decimals with up to three decimal placesUse mental, written and calculator strategies to multiply decimals by one- and two-digit whole numbersUse mental, written and calculator strategies to divide decimals by one-digit whole numbersMultiply and divide decimals by 10, 100 and 1000Solve word problems involving fractions and decimals, including money problemsMake connections between equivalent percentages, fractions and decimalsUse mental, written and calculator strategies to calculate 10%, 25% and 50% of quantities, including as discounts	<p>FRACTIONS, DECIMALS, PERCENTAGES</p> <ul style="list-style-type: none">Apply the four operations with fractions, including mixed numerals, and decimalsConvert between fractions, decimals and percentagesExpress one quantity as a fraction/percentage of anotherCalculate fractions/percentages of quantitiesSolve problems involving fractions, decimals and percentagesInvestigate the concept of irrational numbers <p>FINANCIAL MATHEMATICS</p> <ul style="list-style-type: none">Perform calculations involving GSTCalculate discounts and 'best buys'Solve problems involving profit and loss <p>RATIOS AND RATES</p> <ul style="list-style-type: none">Apply ratios and rates to solve problemsInterpret and draw distance/time graphs	<p>FINANCIAL MATHEMATICS</p> <ul style="list-style-type: none">Solve problems involving earning money and taxationApply the simple interest formula to solve problems, including buying on termsCalculate compound interest using repeated applications of simple interest	<p>FINANCIAL MATHEMATICS</p> <ul style="list-style-type: none">Apply the compound interest formula to solve problems, including depreciation <p>RATIOS AND RATES</p> <ul style="list-style-type: none">Solve problems involving constant rates of changeInterpret graphs of change where the relationship between the variables is constantConstruct graphs of direct linear proportion	<p>RATIOS AND RATES</p> <ul style="list-style-type: none">Interpret and describe graphs of change where the relationship between the variables is not constantSketch graphs of physical phenomena
PATTERNS AND ALGEBRA	<ul style="list-style-type: none">Sort and classify objects into groupsRecognise, copy, continue, create and describe repeating patterns of objects and drawing	<p>PART 1</p> <ul style="list-style-type: none">Recognise, copy, continue, create and describe increasing and decreasing number patternsRecognise, copy, create, continue and describe repeating patterns of objects or symbolsModel and describe odd and even numbers <p>PART 2</p> <ul style="list-style-type: none">Describe patterns with numbers and identify missing elementsFind missing numbers in number sentences involving one operation of addition or subtraction	<p>PART 1</p> <ul style="list-style-type: none">Identify, continue, create, describe and record increasing and decreasing number patternsIdentify odd and even numbers of up to four digits <p>PART 2</p> <ul style="list-style-type: none">Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals signInvestigate and use the properties of odd and even numbersRecognise, continue and describe number patterns resulting from performing multiplicationFind missing numbers in number sentences involving one operation of multiplication or division	<p>PART 1</p> <ul style="list-style-type: none">Identify, continue create and describe increasing and decreasing number patterns with fractions, decimals and whole numbersFind missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign <p>PART 2</p> <ul style="list-style-type: none">Continue, create, record and describe geometric and number patterns in wordsDetermine the rule for geometric and number patterns in words and use the rule to calculate valuesLocate and record the coordinates of points in all four quadrants of the Cartesian plane	<p>ALGEBRAIC TECHNIQUES</p> <p>PART 1</p> <ul style="list-style-type: none">Use letters to represent numbersRecognise and use simple equivalent algebraic expressionsSimplify algebraic expressions involving the four operations <p>PART 2</p> <ul style="list-style-type: none">Substitute into algebraic expressionsExpand and factorise simple algebraic expressions <p>EQUATIONS</p> <ul style="list-style-type: none">Solve simple linear equations using algebraic techniquesSolve simple quadratic equations of the form $x^2 = c$ <p>LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Locate and describe points on the Cartesian plane using coordinatesDescribe translations and reflections in an axis on the Cartesian planeDescribe rotations of multiples of 90° on the Cartesian planeRecognise, describe and record geometric and number patterns in words and algebraic symbolsPlot linear relationships created from simple patterns and equationsSolve simple linear equations using graphical techniques	<p>LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Find the midpoint, gradient and length of intervals on the Cartesian plane using informal strategiesGraph linear relationships from equationsDetermine that parallel lines on the Cartesian plane have equal gradients <p>NON-LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Graph simple parabolas, exponentials and circles on the Cartesian plane using tables of values and digital technologies	<p>ALGEBRAIC TECHNIQUES</p> <ul style="list-style-type: none">Apply the four operations to simplify simple algebraic fractionsExpand and simplify algebraic expressions where appropriate, including binomial productsFactorise monic quadratic trinomial expressions <p>EQUATIONS</p> <ul style="list-style-type: none">Solve linear equations involving grouping symbolsSolve linear equations involving algebraic fractionsSolve quadratic equations of the form $ax^2 = c$Solve quadratic equations of the form $ax^2 + bx + c = 0$ (where $a = 1$) using factorsSolve equations resulting from substitution into formulasSolve word problems using linear equationsSolve linear inequalitiesSolve linear simultaneous equations using algebraic and graphical techniques <p>LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Apply the gradient-intercept form of the equation of a straight line to interpret and graph straight linesApply the properties of the gradients of parallel and perpendicular lines on the Cartesian plane <p>NON-LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Identify, draw and compare graphs of parabolas of the form $y = ax^2 + c$Identify, graph and compare exponential curves and circles	<p>ALGEBRAIC TECHNIQUES</p> <ul style="list-style-type: none">Add and subtract algebraic fractions with binomial numeratorsRecognise and apply the special products to expand binomial productsFactorise monic and non-monic quadratic expressionsApply factorisation to simplify algebraic fractions <p>EQUATIONS</p> <ul style="list-style-type: none">Solve complex linear equations involving two or more algebraic fractionsSolve quadratic equations by factorising, by completing the square or by using the quadratic formulaSolve simple cubic equations of the form $ax^3 = k$Rearrange literal equationsSolve simultaneous equations where one equation is non-linear, using algebraic and graphical techniques <p>LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Use formulas to find the midpoint, gradient and length of intervals on the Cartesian planeApply various standard forms of the equation of a straight lineSolve problems involving straight lines on the Cartesian plane, including parallel and perpendicular lines <p>NON-LINEAR RELATIONSHIPS</p> <ul style="list-style-type: none">Determine the equation of the axis of symmetry and the coordinates of the vertex of a parabolaDraw, interpret and compare graphs of hyperbolas, exponentials, circles and simple cubic functions <p>POLYNOMIALS #</p> <ul style="list-style-type: none">Add, subtract, multiply and divide polynomialsApply the factor and remainder theoremsIdentify features of graphs of polynomials from their equationsSketch a range of polynomials <p>LOGARITHMS #</p> <ul style="list-style-type: none">Define logarithmsEstablish and apply the laws of logarithmsSolve simple exponential equations <p>FUNCTIONS AND OTHER GRAPHS #</p> <ul style="list-style-type: none">Define functions and use function notationDetermine inverse functions <p>Note: Optional subtrands identified by #</p>
<div>For further information go to the Board of Studies, Teaching and Educational Standards (BOSTES)</div> <div>http://syllabus.bos.nsw.edu.au/support-materials/additional-support-materials/</div>								
MEASUREMENT AND GEOMETRY	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5.1	STAGE 5.2	STAGE 5.3
LENGTH	<ul style="list-style-type: none">Identify the attribute of 'length' as a measure of an object from end to endDescribe length and distance using everyday language, including comparativesCompare lengths using direct comparisonRecord comparisons of length informally	<p>PART 1</p> <ul style="list-style-type: none">Use uniform informal units to measure, compare and estimate lengths <p>PART 2</p> <ul style="list-style-type: none">Record lengths by referring to the number and type of uniform informal unit usedCompare and order shapes/objects based on length measured using uniform informal unitsEstimate and measure perimeters of two dimensional shapesUse metres and centimetres to measure and estimate lengths and distancesRecord lengths using the abbreviations m and cm	<p>PART 1</p> <ul style="list-style-type: none">Use metres, centimetres and millimetres to measure, compare, order and estimate lengthsRecord lengths using the abbreviations m, cm and mm <p>PART 2</p> <ul style="list-style-type: none">Select and use appropriate scaled instruments and units to measure and compare lengthsEstimate and measure perimeters of two dimensional shapesConvert between metres, centimetres and millimetresRecord lengths and distances using decimal notation to two decimal placesUse a scaled instrument to measure and compare temperaturesRecord temperatures using the symbol for degrees (°)	<p>PART 1</p> <ul style="list-style-type: none">Use the kilometre to measure lengths and distancesSelect and use appropriate instruments and units to measure lengthsRecord lengths and distances using the abbreviations km, m, cm and mmFind perimeters of common two-dimensional shapes and record the strategy <p>PART 2</p> <ul style="list-style-type: none">Record lengths and distances using decimal notation to three decimal placesConvert between kilometres, metres, centimetres and millimetresSolve problems involving length and perimeter	<p>LENGTH</p> <ul style="list-style-type: none">Find perimeters of two-dimensional shapesEstablish and use formulas to find circumferences of circlesFind arc lengths and the perimeters of quadrants, semi-circles and sectorsSolve problems involving perimeter and circumference			

Mathematics K-10

Continuum of Key Ideas

MEASUREMENT AND GEOMETRY	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5.1	STAGE 5.2	STAGE 5.3
AREA	<ul style="list-style-type: none">Identify the attribute of 'area' as a measure of the amount of surfaceDescribe area using everyday language, including comparativesCompare areas using direct comparisonRecord comparisons of area informally	<p>PART 1</p> <ul style="list-style-type: none">Use uniform informal units to measure and estimate areasRecord areas by referring to the number and type of uniform informal unit used <p>PART 2</p> <ul style="list-style-type: none">Compare and order surfaces based on area measured using uniform informal units	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for formal units to measure areaUse square centimetres and square metres to measure and estimate rectangular (and square) areasRecord lengths using the abbreviations cm² and m² <p>PART 2</p> <ul style="list-style-type: none">Measure and compare the areas of regular and irregular shapes using a square centimetre gridCompare areas measured in square centimetres and square metres	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for square kilometres and hectares to measure areaRecord areas using the abbreviations km² and haDevelop a strategy to find areas of rectangles (including squares) and record the strategy in words <p>PART 2</p> <ul style="list-style-type: none">Develop a strategy to find areas of triangles and record the strategy in wordsSolve problems involving areas of rectangles (including squares) and triangles	<p>AREA</p> <ul style="list-style-type: none">Convert between metric units of areaEstablish and use formulas to find the areas of triangles, special quadrilaterals and circlesSolve problems involving area	<p>AREA AND SURFACE AREA</p> <ul style="list-style-type: none">Solve problems involving areas of composite shapes by dissection into triangles, quadrilaterals, quadrants, semi-circles and sectorsSolve problems involving the surface area of rectangular and triangular prisms	<p>AREA AND SURFACE AREA</p> <ul style="list-style-type: none">Solve problems involving surface area of right prisms, cylinders and related composite solids	<p>AREA AND SURFACE AREA</p> <ul style="list-style-type: none">Solve problems involving surface area of right pyramids, right cones, spheres and related composite solids
VOLUME AND CAPACITY	<ul style="list-style-type: none">Identify the attribute of 'capacity' as a measure of the amount of substance a container can holdIdentify the attribute of 'volume' as a measure of the amount of space an object occupiesDescribe capacity and volume using everyday language, including comparativesCompare volumes and capacities using direct comparisonRecord comparisons of capacity and volume informally	<p>PART 1</p> <ul style="list-style-type: none">Use uniform informal units to measure, compare and estimate capacitiesUse uniform informal units to measure and estimate volumesRecord capacities and volumes by referring to the number and type of uniform informal unit used <p>PART 2</p> <ul style="list-style-type: none">Compare and order objects based on capacity and volume measured using uniform informal units	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for formal units to measure capacity and volumeUse litres to measure, compare and estimate capacities and volumesUse cubic centimetres to measure and compare volumesRecord capacities and volumes using the abbreviations L and cm³ <p>PART 2</p> <ul style="list-style-type: none">Use litres and millilitres to measure, compare and estimate capacities and volumesRecord capacities and volumes using the abbreviations L and mLConvert between litres and millilitresCompare volumes of objects by submerging each in water	<p>PART 1</p> <ul style="list-style-type: none">Use cubic centimetres and cubic metres to measure and estimate volumesSelect and use appropriate units to measure volumeRecord volumes using the abbreviations cm³ and m³ <p>PART 2</p> <ul style="list-style-type: none">Connect volume and capacity and their units of measurementRecord volumes and capacities using decimal notation to three decimal placesConvert between millilitres and litresDevelop a strategy to find volumes of rectangular prisms and record the strategy in words	<p>VOLUME</p> <ul style="list-style-type: none">Visualise and draw different views of three dimensional objectsConvert between metric units of volume and capacityEstablish and use formulas to find volumes of right prisms and cylindersSolve problems involving volume and capacity		<p>VOLUME</p> <ul style="list-style-type: none">Solve problems involving volume and capacity of prisms, cylinders and related composite solids	<p>VOLUME</p> <ul style="list-style-type: none">Solve problems involving volume of right pyramids, right cones, spheres and related composite solids
MASS	<ul style="list-style-type: none">Identify the attribute of 'mass' as a measure of the amount of matter in an objectDescribe mass using everyday language, including comparativesCompare masses directly by heftingRecord comparisons of mass informally	<p>PART 1</p> <ul style="list-style-type: none">Place objects on either side of a pan balance to obtain a level balanceUse a pan balance to compare two objects based on mass <p>PART 2</p> <ul style="list-style-type: none">Use uniform informal units to measure, compare and estimate the masses of objectsRecord masses by referring to the number and type of uniform informal unit used	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for formal units to measure massUse kilograms to measure, compare, order and estimate massesRecord masses using the abbreviation kg <p>PART 2</p> <ul style="list-style-type: none">Use kilograms and grams to measure and compare masses using a scaled instrumentRecord masses using the abbreviations kg and g	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for tonnes to measure massRecord masses using the abbreviations t, kg and gSelect and use appropriate instruments and units to measure massDistinguish between 'gross mass' and 'net mass'Solve problems involving mass <p>PART 2</p> <ul style="list-style-type: none">Record mass using decimal notation to three decimal placesConvert between tonnes, kilograms and grams				
TIME	<ul style="list-style-type: none">Compare and order the duration of events using everyday languageSequence events in timeConnect days of the week to familiar events and actionsTell time on the hour on digital and analog clocks	<p>PART 1</p> <ul style="list-style-type: none">Name and order months and seasonsUse a calendar to identify the date and determine the number of days in each monthTell time to the half-hour <p>PART 2</p> <ul style="list-style-type: none">Use a calendar to determine duration in months, weeks and daysUse informal units to measure and compare the durations of eventsExperience activities with duration of one hour, half/quarter of an hour, one minute and a few secondsTell time to the quarter-hour, using the language of 'past' and 'to'	<p>PART 1</p> <ul style="list-style-type: none">Recognise the coordinated movements of the hands on a clockRead and record time to the minute, using digital notation and the terms 'past' and 'to' <p>PART 2</p> <ul style="list-style-type: none">Convert between seconds, minutes, hours and daysUse and interpret am and pm notationRead and interpret simple timetables, timelines and calendars	<p>PART 1</p> <ul style="list-style-type: none">Convert between 12- and 24-hour timeDetermine and compare the duration of events <p>PART 2</p> <ul style="list-style-type: none">Interpret and use timetablesDraw and interpret timelines using a given scale		<p>TIME</p> <ul style="list-style-type: none">Perform operations with time units mentally and with a calculatorInterpret international time zones		
THREE-DIMENSIONAL SPACE	<ul style="list-style-type: none">Describe features of common three dimensional objects using everyday languageSort and manipulate three-dimensional objects found in the environment	<p>PART 1</p> <ul style="list-style-type: none">Distinguish between flat and curved surfacesUse the term 'faces' to describe flat surfaces with straight edgesIdentify cones, cubes, cylinders, spheres and prisms presented in different orientations, in pictures and the environmentRecognise that three-dimensional objects look different from different vantage-points <p>PART 2</p> <ul style="list-style-type: none">Use the terms 'flat surface', 'curved surface', 'face', 'edge' and 'vertex' appropriately to describe three-dimensional objectsRecognise faces of three-dimensional objects as two-dimensional shapesDistinguish between three-dimensional objects and two-dimensional shapesRepresent three-dimensional objects in models and drawings	<p>PART 1</p> <ul style="list-style-type: none">Identify, describe and compare features of prisms, pyramids, cylinders, cones and spheresMake models of three-dimensional objectsCreate nets from everyday packages <p>PART 2</p> <ul style="list-style-type: none">Represent three-dimensional objects in drawings showing depthSketch three-dimensional objects from different viewsInterpret and make drawings of objects on isometric grid paper	<p>PART 1</p> <ul style="list-style-type: none">Name prisms and pyramids according to the shape of their 'base'Recognise that prisms have a uniform cross section and pyramids do notDescribe and compare properties of prisms and pyramids in terms of their faces, edges and verticesConnect three-dimensional objects with their nets <p>PART 2</p> <ul style="list-style-type: none">Construct prisms and pyramids using a variety of materials, and given drawings from different views				
TWO-DIMENSIONAL SPACE	<ul style="list-style-type: none">Identify, name and describe circles, squares, triangles and rectangles presented in different orientations, in pictures and the environmentSort, manipulate, make and draw circles, squares, triangles and rectangles	<p>PART 1</p> <ul style="list-style-type: none">Identify horizontal, vertical and parallel linesIdentify and name triangles, quadrilaterals, pentagons, hexagons and octagons presented in different orientations, in pictures and the environmentUse the terms 'side' and 'vertex' to describe and compare two-dimensional shapes <p>PART 2</p> <ul style="list-style-type: none">Make and draw two-dimensional shapes in different orientationsIdentify, perform and record the result of one step 'slides' and 'flips'Make symmetrical designs with a variety of materialsIdentify, perform, describe and record the result of full, half and quarter 'turns'	<p>PART 1</p> <ul style="list-style-type: none">Identify and name the special quadrilaterals presented in different orientationsIdentify and describe shapes as 'regular' or 'irregular'Describe and compare features of shapes, including the special quadrilateralsIdentify and draw lines of symmetry on shapes <p>PART 2</p> <ul style="list-style-type: none">Combine common shapes to form other shapes and record the arrangementSplit common shapes into other shapes and record the resultUse transformations to create and describe symmetrical designsCreate and record tessellating designs	<p>PART 1</p> <ul style="list-style-type: none">Identify, name and draw right-angled, equilateral, isosceles and scalene trianglesCompare and describe side properties of the special quadrilaterals and special trianglesExplore angle properties of the special quadrilaterals and special trianglesClassify and draw regular and irregular two dimensional shapes from descriptions of their featuresUse the terms 'translate', 'reflect' and 'rotate' to describe transformations of shapesIdentify line and rotational symmetriesMake and compare enlargements of shapes/pictures <p>PART 2</p> <ul style="list-style-type: none">Identify, describe, compare and draw diagonals of two-dimensional shapesIdentify and name parts of circlesIdentify, use and describe combinations of translations, reflections and rotations	<p>RIGHT-ANGLED TRIANGLES (PYTHAGORAS)</p> <ul style="list-style-type: none">Establish and apply Pythagoras' theorem to find sides in right-angled triangles <p>PROPERTIES OF GEOMETRICAL FIGURES</p> <ul style="list-style-type: none">Solve problems involving Pythagoras' theoremClassify and determine properties of triangles and quadrilateralsIdentify line and rotational symmetriesDetermine the angle sums of triangles and quadrilateralsUse properties of shapes to find unknown sides and angles in triangles and quadrilaterals giving a reasonIdentify congruent figuresIdentify congruent triangles using the four tests	<p>RIGHT-ANGLED TRIANGLES (TRIGONOMETRY)</p> <ul style="list-style-type: none">Use trigonometry to find sides and angles in right-angled triangles (angles measured to nearest degree)Apply trigonometry to solve problems involving right-angled triangles, including the use of angles of elevation and depression, from a given diagram <p>PROPERTIES OF GEOMETRICAL FIGURES</p> <ul style="list-style-type: none">Identify similar figures and describe their properties informallyUse scale factors and proportion statements to determine unknown lengths in similar figuresUse scales on maps, plans and drawings	<p>RIGHT-ANGLED TRIANGLES (TRIGONOMETRY)</p> <ul style="list-style-type: none">Use trigonometry to find sides and angles in right-angled triangles (including angles measured to nearest minute or second)Apply trigonometry to solve word problems involving right-angled triangles, including the use of three-figure bearings and angles of elevation and depression <p>PROPERTIES OF GEOMETRICAL FIGURES</p> <ul style="list-style-type: none">Write formal proofs of congruent trianglesVerify properties of isosceles and equilateral triangles, and special quadrilaterals using congruent trianglesDetermine the minimum conditions for triangles to be similarUse deductive reasoning in numerical exercises involving plane shapesEstablish and use the sum of exterior angles and the sum of interior angles results for polygons	<p>TRIGONOMETRY & PYTHAGORAS' THEOREM</p> <ul style="list-style-type: none">Apply Pythagoras' theorem and trigonometry to solve three-dimensional problems involving right-angled trianglesDefine trigonometric functions and draw them for at least 0° ≤ x ≤ 360°Determine and use the exact trigonometric ratios for 300, 450 and 600 to solve problemsDetermine possible acute and/or obtuse angles for a given trigonometric ratioApply the sine, cosine and area rules to solve problems involving non-right-angled triangles <p>PROPERTIES OF GEOMETRICAL FIGURES</p> <ul style="list-style-type: none">Write formal proofs of similar trianglesUse similarity relationships for area and volumeApply deductive reasoning to prove properties of isosceles and equilateral triangles, and special quadrilateralsApply deductive reasoning, including use of congruence and similarity, in numerical and non-numerical geometry exercises
ANGLES			<p>PART 1</p> <ul style="list-style-type: none">Identify and describe angles as measures of turnCompare angle sizes in everyday situationsIdentify 'perpendicular' lines and 'right angles' <p>PART 2</p> <ul style="list-style-type: none">Draw and classify angles as acute, obtuse, straight, reflex or a revolution	<p>PART 1</p> <ul style="list-style-type: none">Recognise the need for formal units to measure anglesMeasure, compare and estimate angles in degrees (up to 360°)Record angle measurements using the symbol for degrees (°)Construct angles using a protractor (up to 360°)Describe angle size in degrees for each angle classification <p>PART 2</p> <ul style="list-style-type: none">Identify and name angle types formed by the intersection of straight lines, including 'angles on a straight line', 'angles at a point' and 'vertically opposite angles'Use known angle results to find unknown angles in diagrams	<p>ANGLE RELATIONSHIPS</p> <ul style="list-style-type: none">Use the language, notation and conventions of geometryApply the geometric properties of angles at a point to find unknown angles with appropriate reasoningCompare two sets of numerical data in a display using mean, median and rangeInterpret and critically evaluate reports in the media and elsewhere that link claims to data displays and statistics			<p>#CIRCLE GEOMETRY</p> <ul style="list-style-type: none">Prove and apply angle, chord, tangent and secant properties of circles
POSITION	<ul style="list-style-type: none">Give and follow simple directionsDescribe position using everyday languageUse the terms 'left' and 'right' to describe position in relation to self	<p>PART 1</p> <ul style="list-style-type: none">Give and follow directions to move to familiar locations and to position objectsUse the terms 'left' and 'right' to describe position in relation to self and from the perspective of a person facing in the opposite directionDescribe a path from one location to another <p>PART 2</p> <ul style="list-style-type: none">Interpret simple maps of familiar locationsRepresent the position of objects in models, photographs and drawings	<p>PART 1</p> <ul style="list-style-type: none">Use grid-referenced maps to locate and describe positions and pathwaysDraw simple maps, with and without a grid <p>PART 2</p> <ul style="list-style-type: none">Determine directions N, E, S, W and NE, SE, SW, NW, given one of the directionsInterpret legends and directions on mapsUse the scale to calculate the distance between two points on maps	<p>POSITION</p> <ul style="list-style-type: none">Use grid-referenced maps to locate and describe positionsFollow a sequence of directions, including compass directions, to find a particular location on a mapDescribe routes using landmarks and directional language		<p>For further information go to the Board of Studies, Teaching and Educational Standards (BOSTES)</p> <p>http://syllabus.bos.nsw.edu.au/support-materials/additional-support-materials/</p>		

STATISTICS AND PROBABILITY	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5.1	STAGE 5.2	STAGE 5.3
DATA	<ul style="list-style-type: none">Collect information about themselves and their environmentOrganise actual objects into data displaysInterpret data displays made from objects	<p>PART 1</p> <ul style="list-style-type: none">Collect data and track what has been countedCreate data displays using objects and pictures (one-to-one correspondence) and interpret them <p>PART 2</p> <ul style="list-style-type: none">Pose questions and collect categorical dataCreate data displays using lists, tables and picture graphs (one-to-one correspondence) and interpret them	<p>PART 1</p> <ul style="list-style-type: none">Plan methods for data collectionCollect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs (one to one correspondence)Interpret and compare data displays <p>PART 2</p> <ul style="list-style-type: none">Select, trial and refine methods for data collection, including survey questions and recording sheetsConstruct data displays, including tables, and column graphs and picture graphs of many-to-one correspondenceEvaluate the effectiveness of different displays	<p>PART 1</p> <ul style="list-style-type: none">Collect categorical and numerical data by observation and by surveyConstruct data displays, including tables, column graphs, dot plots and line graphs, appropriate for the data typeDescribe and interpret data presented in tables, column graphs, dot plots and line graphs <p>PART 2</p> <ul style="list-style-type: none">Interpret and create two-way tablesInterpret side-by-side column graphsCompare a range of data displays to determine the most appropriate display for particular sets of dataInterpret and critically evaluate data presented in digital media and elsewhere	<p>PART 1</p> <ul style="list-style-type: none">Identify variables as categorical or numerical (discrete or continuous)Identify and distinguish between a 'population' and a 'sample'Investigate techniques for collecting data and consider their implications and limitationsCollect and interpret data from primary and secondary sources, including surveysConstruct and interpret frequency tables, histograms and polygonsConstruct and interpret dot plots, stem and leaf plots, divided bar graphs, sector graphs and line graphs <p>SINGLE VARIABLE DATA ANALYSIS</p> <ul style="list-style-type: none">Calculate mean, median, mode and range for sets of dataInvestigate the effect of outliers on the mean and medianDescribe and interpret a variety of data displays using mean, median and rangeCalculate and compare summary statistics of different samples drawn from the same population	<p>SINGLE VARIABLE DATA ANALYSIS</p> <ul style="list-style-type: none">Construct and interpret back-to-back stem and leaf plotsDescribe data, using terms including 'skewed', 'symmetric' and 'bi-modal'Compare two sets of numerical data in a display using mean, median and rangeInterpret and critically evaluate reports in the media and elsewhere that link claims to data displays and statistics	<p>SINGLE VARIABLE DATA ANALYSIS</p> <ul style="list-style-type: none">Determine quartiles and interquartile rangeConstruct, interpret and use box plots to compare sets of dataCompare shapes of box plots to corresponding histograms and dot plotsCritically evaluate sources of data in media reports and elsewhere <p>BIVARIATE DATA ANALYSIS</p> <ul style="list-style-type: none">Construct and interpret displays of bivariate numerical data where the independent variable is timeConstruct and interpret scatter plots of two numerical variables	<p>SINGLE VARIABLE DATA ANALYSIS</p> <ul style="list-style-type: none">Calculate the standard deviation of a set of dataUse mean and standard deviation to compare two sets of data <p>BIVARIATE DATA ANALYSIS</p> <ul style="list-style-type: none">Construct a line of best fit for bivariate numerical data using digital technologyCritically evaluate the processes of planning, collecting, analysing and reporting studies in the media and elsewhereRecognise that statistics are used in the decision-making processes of governments and companies
CHANCE		<p>PART 1</p> <ul style="list-style-type: none">Recognise the element of chance in familiar situationsDescribe chance events using everyday language <p>PART 2</p> <ul style="list-style-type: none">Identify practical activities and everyday events that involve chanceDescribe events as 'likely' or 'unlikely'Distinguish between 'possible' and 'impossible' eventsIdentify some events as 'certain' or 'impossible'	<p>PART 1</p> <ul style="list-style-type: none">Identify and describe possible 'outcomes' of chance experimentsPredict and record all possible combinations in a chance situationConduct chance experiments and compare predicted with actual results <p>PART 2</p> <ul style="list-style-type: none">Describe possible everyday events and order their chances of occurringIdentify everyday events where one occurring cannot happen if the other happensIdentify events where the chance of one occurring will not be affected by the occurrence of the other	<p>PART 1</p> <ul style="list-style-type: none">List outcomes of chance experiments involving equally likely outcomesRepresent probabilities using fractionsRecognise that probabilities range from 0 to 1 <p>PART 2</p> <ul style="list-style-type: none">Compare observed frequencies in chance experiments with expected frequenciesRepresent probabilities using fractions, decimals and percentagesConduct chance experiments with both small and large numbers of trials	<p>PROBABILITY</p> <p>PART 1</p> <ul style="list-style-type: none">Construct sample spaces for single-step experiments with equally likely outcomesFind probabilities of events in single-step experimentsIdentify complementary events and use the sum of probabilities to solve problems <p>PART 2</p> <ul style="list-style-type: none">Describe events using language of 'at least', 'exclusive' or '(A or B but not both)', 'inclusive' or '(A or B or both) and 'and'Represent events in two-way tables and Venn diagrams and solve related problems	<p>PROBABILITY</p> <ul style="list-style-type: none">Calculate relative frequencies to estimate probabilitiesCalculate probabilities from Venn diagrams and two-way tables	<p>PROBABILITY</p> <ul style="list-style-type: none">Calculate probabilities for simple and compound events in two- and three-step chance experiments with and without replacementDistinguish between independent and dependent events informallyCalculate probabilities of events where a condition is given that restricts the sample spaceCritically evaluate conditional statements in chance situations	